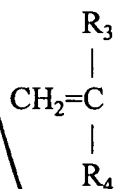


**WE CLAIM:**

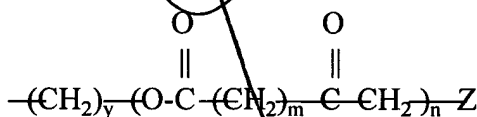
1. In a liquid artificial nail composition comprised of one or more addition-polymerizable, ethylenically unsaturated monomers, the improvement wherein the composition also contains a monoethylenically unsaturated vinyl monomer that contains two or more carbonyl groups.

2. The composition of claim 1 wherein the monoethylenically unsaturated vinyl monomer that contains two or more carbonyl groups is of the formula:



wherein  $R_3$  is H, a  $C_{1-30}$  straight or branched chain alkyl, aryl, aralkyl; and

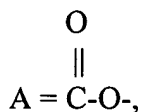
$R_4$  is  $-A-X-(OC-(CH_2)_m-C(=O)-CH_2)_n-Z$ , or



wherein  $A = -C(=O)-O-$ , or  $O-C(=O)-$ ,  $X = C_{1-30}$  straight or branched chain alkyl,  $m$  is 1 to 5,  $n$  is 1 to 30,  $y$  is 0 to 50; and  $Z = H$  or a  $C_{1-30}$  straight or branched chain alkyl.

3. The composition of claim 2 wherein  $R_3$  is H or a  $C_{1-8}$  alkyl, and  $R_4$  is

$-A-X-(OC-(CH_2)_m-C(=O)-CH_2)_n-Z$ , wherein



X = C<sub>1-5</sub> alkylene

m = 1-5

n = 1-5, and

Z = C<sub>1-10</sub> straight chain alkyl.

- 5 4. The composition of claim 3 wherein R<sub>3</sub> is hydrogen or methyl, and:

X = CH<sub>2</sub>CH<sub>2</sub>

m = 1

n = 1

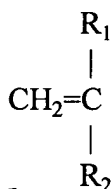
Z = CH<sub>3</sub>

- 10 5. The composition of claim 4 wherein multicarbonyl-vinyl containing monomer is acetoacetoxyethyl methacrylate.

- 15 6. The composition of claim 2 additionally comprising at least one other ethylenically unsaturated monomer.

7. The composition of claim 6 wherein the other ethylenically unsaturated monomer comprises at least one monofunctional ethylenically unsaturated monomer.

- 20 8. The composition of claim 7 wherein the monofunctional ethylenically unsaturated monomer is of the formula (Formula I):



25 wherein R<sub>1</sub> is H, a C<sub>1-30</sub> straight or branched chain alkyl, aryl, aralkyl; R<sub>2</sub> is a pyrrolidone, or a substituted or unsubstituted aromatic, alicyclic, or bicyclic ring where the substituents are C<sub>1-30</sub>

112  
only  
1

$R_2$   $M$

straight or branched chain alkyl, or COOM wherein M is H, a  $C_{1-30}$  straight or branched chain alkyl, pyrrolidone, or a substituted or unsubstituted aromatic, alicyclic, or bicyclic ring where the substituents are  $C_{1-30}$  straight or branched chain alkyl which may be substituted with one or more hydroxyl groups, or  $[(CH_2)_m O]_n H$  wherein m is 1-20, and n is 1-200.

5 9. The composition of claim 8 wherein  $R_1$  is H or a  $C_{1-30}$  alkyl, and  $R_2$  is COOM wherein M is a  $C_{1-30}$  straight or branched chain alkyl which may be substituted with one or more hydroxy groups.

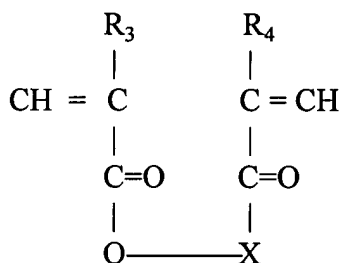
10. The composition of claim 9 wherein  $R_1$  is H or  $CH_3$ , and  $R_2$  is COOM wherein M is a  $C_{1-10}$  straight or branched chain alkyl which may be substituted with one or more hydroxy groups.

10 11. The composition of claim 10 wherein the other monofunctional ethylenically unsaturated monomer is a mixture of monomers of Formula I where in one monomer  $R_1$  is H or  $CH_3$  and  $R_2$  is COOM where M is a  $C_{1-10}$  alkyl, and where in the second monomer  $R_1$  is H or  $CH_3$ , and  $R_2$  is COOM where M is a  $C_{1-10}$  alkyl substituted with one or more hydroxy groups.

15 12. The composition of claim 11 wherein the monofunctional ethylenically unsaturated monomer is a mixture of ethyl methacrylate and hydroxypropyl methacrylate.

13. The composition of claim 7 wherein the other ethylenically unsaturated monomer additionally comprises at least one difunctional ethylenically unsaturated monomer.

14. The composition of claim 13 wherein the difunctional monomer is of the formula:



wherein  $R_3$  and  $R_4$  are each independently H, a  $C_{1-30}$  straight or branched chain alkyl, aryl, or aralkyl; and X is  $[(CH_2)_xO_y]_z$  wherein x is 1-20, and y is 0-200, and z is 1-100.

15. The composition of claim 14 wherein the  $R_3$  and  $R_4$  are  $CH_3$  and X is  $[(CH_2)_xO_y]_z$  wherein x is 1-4; and y is 1-6, and z is 1-10.

16. The composition of claim 15 wherein x is 2, y is 1, and z is 4, and the compound is tetraethylene glycol dimethacrylate.

17. The composition of claim 7 additionally containing at least one tri- or polyfunctional ethylenically unsaturated monomer.

18. The composition of claim 17 wherein the tri- or polyfunctional ethylenically unsaturated monomer is trimethylolpropane trimethacrylate ester.

19. The composition of claim 7 additionally comprising 0.001-5% by weight of the total composition of a polymerization accelerator.

20. The composition of claim 19 wherein the polymerization accelerator is an aromatic or aliphatic tertiary amine.

21. The composition of claim 7 additionally comprising 0.001-5% of a plasticizer.

22. The composition of claim 21 wherein the plasticizer is an ester, a solvent, a silicone, or mixtures thereof.

23. The composition of claim 7 additionally comprising 0.001-5% by weight of the total composition of a U.V. absorber.

25. In a liquid artificial nail composition comprised of one or more esters of acrylic or methacrylic acid and an aliphatic alcohol or ether-alcohol, the improvement wherein the

composition also contains a monoethylenically unsaturated vinyl monomer that contains two or more carbonyl groups.

26. A polymerized artificial nail structure having a thickness of about 10-60 mils, and a modulus of elasticity of about 550-800 N/m<sup>2</sup>, comprising a copolymer of at least one ethylenically unsaturated monomer and a multicarbonyl vinyl-containing monomer.

27. A method for reducing, ameliorating, or eliminating delamination of an artificial nail structure from the natural nail surface, wherein said artificial nail structure is obtained by polymerizing on the natural nail surface a polymerizable monomer composition, comprising adding to said polymerizable monomer composition an effective amount of at least one multicarbonyl-vinyl containing monomer.

28. A method for improving adhesion of an artificial nail structure to the nail surface, wherein the artificial nail structure has been applied by polymerizing on the nail surface a polymerizable monomer composition, comprising adding to said polymerizable monomer composition an effective amount of at least one multicarbonyl-vinyl containing monomer.

29. A method for reducing premature gelation of a liquid monomer composition containing at least one ethylenically unsaturated monomer, comprising adding to said composition an effective amount of at least one multicarbonyl-vinyl containing monomer.

30. A method for applying an artificial nail to a nail surface comprising applying to said nail surface a polymerizable composition containing at least one monoethylenically unsaturated vinyl

monomer that contains two or more carbonyl groups.